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IFPRI REPORTS ON AFRICA PROSPECTS FOR 2025

<http://www.ifpri.org/2020/dp/vp41.pdf>.

In "Looking Ahead: Long Term Prospects for Africa's Agricultural Development and Food Security," Mark Rosegrant and colleagues of the International Food Policy Research Institute (IFPRI) use scenarios to illustrate the future for Africa if current economic trends continue.

Using computer modeling to project supply, demand, price, and trade of 32 major food commodities for five regions of Sub-Saharan Africa and two regions of West Asia and North Africa through to 2025, researchers found that:

1. the number of hungry children in Africa would decrease dramatically to 9.4 million by 2025,
2. West Asia and North Africa will actually see a decline of 2.3 million hungry children by 2025, and
3. agricultural production grows only modestly to 2025.

To address food and nutrition security for Africa, researchers recommend common policy priorities for governments to consider. These include:

1. reform of agricultural policies, trade, and tariffs;
2. increased investment in rural infrastructure, education, and social capital;
3. better management of crops, land, water, and inputs;
4. increased agricultural research and extension; and
5. greater investments in women.

The report also recommends investment in both conventional breeding and biotechnology, such as genetic engineering of key crops, tissue culture, and other molecular techniques.

CGIAR AWARDS FELLOWSHIPS TO EAST AFRICAN WOMEN CROP SCIENTISTS

http://www.genderdiversity.cgiar.org/resource/women_fellowships.asp

The Gender and Diversity Program of the Consultative Group on International Agricultural Research (CGIAR) recently announced the names of the first recipients of a new fellowship for East African women crop scientists. The fellowship offers the recipients a two year mentoring relationship with a senior scientist in their field, as well as funds to support presentation of their research at a major scientific conference each year, among others.

This year's 11 winners come from national research institutions and universities in Kenya, Uganda, and Tanzania, such as the Kenya Agricultural Research Institute (KARI), the Makerere University in Uganda, and the Kenyatta University of Agriculture and Technology, Kenya. Winners were selected on the basis of their scientific achievement and leadership potential. The next round of selection will take place in 2006.

KENYA TO REPEAT FIELD TRIAL FOR Bt MAIZE

dotunge@absfafrica.org

The Kenya Agricultural Research Institute (KARI) and the International Maize and Wheat Improvement Centre (CIMMYT) are set to repeat the confined field trial for Bt maize contrary to media reports that the government had terminated it.

The trial to test the effectiveness of Bt maize that was genetically modified to resist Kenyan stem borers started in May 2005 at an open quarantine site at Kiboko, near Nairobi. It is to be repeated following an inadvertent application of Furadan, a systemic insecticide, by the technician in-charge to control white grubs.

CIMMYT and KARI project managers said the erroneous use of the insecticide effectively invalidated the trial results, prompting them to notify the National Biosafety Committee (NBC) on 18 July 2005 who recommended that the current crop be immediately harvested and destroyed under the supervision of the Kenya Plant Health Inspectorate Service (KEPHIS), which also supervised its planting.

The Insect Resistant Maize for Africa (IRMA) project, a joint undertaking of KARI and CIMMYT, will apply for the NBC's permission to repeat the trial at the same site once the Furadan has disintegrated—eight weeks from the date it was applied.

GHANA FORMULATES BIOSAFETY FRAMEWORK

<http://allafrica.com/stories/200508180613.html>

Christine Churcher, Ghana's Minister of Environment & Science, recently launched the country's National Biosafety Framework in Accra, Ghana. This framework is meant to ensure an adequate level of production in the field of safe transfer, handling, and use of living modified organisms resulting from modern biotechnology.

"By the accession," Ms. Churcher said, "We affirm our position for the safe use, handling, and transportation of genetically modified organisms that might find [their] way to Ghana." She assured Ghanaians that all GMOs will pass through rigorous inspection to ensure that they conform to the country's regulations and standards.

Edward Nsenkyire, Chief Director of the Ministry of Environment & Science, stressed that Ghana's position on the issue is strictly based on the precautionary principle, and that every effort will be made to ensure safety in the use of GMOs. Professor Alfred Oteng-Yeboah, Chairman of the National Biodiversity Committee, said that with the national framework in place, wildlife and other organisms in Ghana would be adequately cared for and protected.

AEC-AMERSHAM - RESPONDING TO THE FUTURE

eGoli BIO and AEC-Amersham Sign Memorandum of Understanding

AEC-Amersham, one of South Africa's most well-respected suppliers of laboratory products and services, has recently signed a Memorandum of Understanding with eGoli BIO, a non-profit business incubator, created to support start-up companies operating in the life sciences arena.

The Memorandum of Understanding was signed in March 2005 and is valid for a year, during which time eGoli BIO and AEC-Amersham will be jointly involved in evaluating and assessing the commercial viability of identified projects. This collaboration is a symbiotic alliance between a private company and public entity, in which each organisation will provide expertise in its respective area of specialisation. eGoli BIO will provide a supportive environment for entrepreneurs engaged in the commercialisation of new life sciences technologies and AEC-Amersham will provide funds or equipment for the entrepreneurs identified and sought out by eGoli BIO.

"AEC-Amersham recognises that biotechnology will assume increasing importance as a driver of both the global and local economies in years to come. In view of this and our involvement with laboratories throughout South Africa, we have made a strategic decision to become actively involved in promoting this sector" said Mr. Wayne Flowers, managing director of AEC-Amersham.

Dr Charles Dettman, CEO of eGoli BIO said, "I was impressed by the initiative shown by AEC-Amersham, who proactively approached eGoli Bio with a view to identifying opportunities for investing in biotechnology start-up companies, not only as a means of creating new business for themselves, but also as a way of investing in the development of the South African bioeconomy, as a whole. This highlights AEC-Amersham's foresight into the potential of this emerging industry sector – in a very real sense, they are responding to the future."

The Memorandum of Understanding marks the beginning of a relationship between two organizations with compatible aims and interests, working together to promote the growth of the biotechnology sector in South Africa.

For further information on the possibilities of commercialising biotechnology ideas contact eGoli Bio +27 (0) 11 605 2941

WORKSHOP REPORT DETAILS SORGHUM GENOME RESEARCH

<http://www.plantphysiol.org/cgi/reprint/138/4/1898>.

Members of the worldwide sorghum community met in 2004 at the Sorghum Genomics Planning Workshop. The workshop aimed:

1. obtain a status report on the development and accessibility of sorghum genome research information, technologies, and infrastructure;
2. identify future priorities and needs for sorghum genomics research; and
3. better organize the sorghum community; and 4) foster sorghum improvement.

The workshop report is now available online on the Plant Physiology Journal's website.

Sorghum is the fifth most important cereal crop in the world, providing food, feed, fibre, and fuel to much of the developing world. It is closely related to major crops such as sugarcane and pearl millet, and information on its genome may provide a better roadmap for studying the domestication of cereal crops. The complete genome of sorghum comprises about 700 million base pairs, 60% larger than that of rice, but one fourth the size of the maize genome.

Workshop participants proposed a three-stage strategy to complete the sequencing of the sorghum genome. This strategy would include gene space characterization, which would progress into a gold-standard physical map, and which would eventually end in a complete genome sequence. Participants also recognized the need for a unified sorghum database, similar to those for maize (the Maize GDB) and rice (Gramene) which are available online.

Africa is also sorghum's home, and scientists see the sequencing project as "an attractive vehicle for engagement of the African scientific community in genomics and its applications, in particular regarding documentation and analysis of in situ diversity that is presently inaccessible to Western scientists."

EXPO CELEBRATES COMMERCIAL BIOTECHNOLOGY

http://www.checkbiotech.org/root/index.cfm?fuseaction=news&doc_id=11145&start=1&control=217&page_start=1&page_nr=101&pg=1

South Africa's first Biotechnology Expo - Biotech Africa - that runs at the Sandton Convention Centre from October 18 to October 20 is timed to coincide with the 10th year of commercial use of plant biotechnology products around the world.

This milestone also marks more than 20 years of research and development in agricultural biotechnology. While many people are still under the impression that biotechnology is a new, untested science, the first seeds actually went into the ground in 1996 and, since then, biotech crops have been planted and grown on a total area of 385-million hectares - an area roughly equivalent to 40% of the entire US or China and 15 times the total land area of the UK - by more than 10-million farmers in 20 countries worldwide.

The establishment of Biotech Africa, the first local Biotech expo, marks another step in the development of the plant biotechnology industry in South Africa. This is not, however, to say that Biotech Africa will be focused on plant biotechnology - the exhibition covers the full spectrum of biotechnology including plant, industrial, environmental, human health, pharmaceutical and bioinformatics.

The aim of the expo is to enable local innovation and development in biotechnology by bringing together the scientists, engineers, economists, business managers, and institutions that are poised to play essential roles in strengthening and growing our biotechnology industry and, subsequently, the economies of South Africa and the African continent as a whole. The expo is collocated with the Bio2Biz Conference, which is being jointly hosted by South Africa's Biotech Regional Innovation Centres (BRICs) and the National Biotech Instruments (NBI), under the auspices of the National Department of Science & Technology.

AFRICAN SCIENTISTS PLAN GMO SUPER SORGHUM

http://www.checkbiotech.org/blocks/dsp_document.cfm?doc_id=10704

African scientists are developing a GM super strain of grain sorghum that they say will be vitamin-packed to help fight malnutrition. The project brings together several African research institutions as well as a unit of U.S. Dupont, South Africa's Council for Scientific and Industrial Research (CSIR) said in a statement on Tuesday.

"The primary objective of the project is to produce seeds of nutritionally improved cultivars of sorghum, appropriate for planting, which African small-scale farmers can source on a licence-free basis," CSIR plant biotechnologist Blessed Okole said in the statement.

Development of the new sorghum will be carried out primarily by Dupont subsidiary Pioneer Hi-Bred International, the University of Missouri-Columbia in the United States and by South Africa's CSIR.

Sorghum is a hardy grain that thrives in the semi-arid conditions that often prove too harsh for non-indigenous crops such as maize, which has replaced sorghum as the staple in many parts of Africa since it was introduced by European colonists. But natural sorghum does not contain enough nutrients on its own, and adults and children whose diet is primarily based on sorghum can develop a form of hunger called micronutrient malnutrition, CSIR said.

Super sorghum will have higher levels of pro-vitamin A and E, iron, zinc as well as essential amino acids, CSIR said.

Biotech crops have sparked controversy in Africa, where some countries, despite having trouble growing enough food, have refused GMO food aid or insisted it be milled before distribution to avoid contamination of local seed stocks. Anti-GMO activists say so-called Frankenstein foods risk destabilising the environment and food production, for example by creating super-weeds, or might damage those who eat them via unknown side-effects.

GMO producers -- including several in South Africa, which has pioneered GMO research in Africa -- counter that more productive crop strains better able to cope with climatic extremes will help ensure fewer people go hungry in the poorest continent.

BIOTECH VACCINE TO COMBAT SLEEPING SICKNESS

Karel Smrčka, Engineering News, Vol 25, No. 31, 12-18 August 2005

African trypanosomiasis, known in cattle as Nagana and in human as sleeping sickness is spread by the bite of the tsetse fly and is fatal if left untreated. It occurs in 36 countries of sub-Saharan Africa, is reaching epidemic proportions and is having a devastating effect on local economics. The Fraunhofer Centre for Molecular Biotechnology (FCMB) has received a \$1,2 million grant from Bill and Melinda Gates Foundation for preclinical studies towards the development of a vaccine to fight the disease.

The FCMB will apply its newly developed suite of technologies to engineer, produce and evaluate candidate vaccines to combat the disease. The project is a collaborative effort between the FCMB, the Institute of Parasitology at McGill University in Canada and the Makerere University in Uganda

BIOTECH PROVIDES ALTERNATIVE TO CLINICAL ANIMAL EXPERIMENTS

Karel Smrčka, Engineering News, Vol 25, No. 31, 12-18 August 2005

Scientists at Axiogenesis, a Cologne-based biotechnology company focusing on applied stem-cell technology have developed an alternative to clinical animal experiments. They breed rhythmically-contracting myocardial cells from mice. When cardiotoxic substances are added to the cells, the rhythm and strength of the pulses change. These changes enable conclusions to be drawn as to the effects and side effects of medicines and environmental toxins.

"The new method enables us to cut down animal experiments in cardiotoxicology to typically 1% or 2%," stresses the company's chairman Heribert Bohlen. " A key aspect of our RE Tox test is that it even reveals the devastating effect of thalidomide on the embryo."

Experiments with animals in the early 1960's failed to show the teratogenic effect of thalidomide, first introduced in West Germany as Contergan.

HUNGRY FOR BIOTECHNOLOGY - HOW EUROPE STARVES THE WORLD'S POOR

Ronald Bailey at <http://reason.com/rb/rb083105.shtml>

The European Union and fellow travelling anti-biotech activists may well succeed in bottling up the next wave of genetically improved crops that aim directly at helping poor farmers in the developing world. How? Anti-biotech European regulations are spooking the governments of poor countries into preventing their farmers from growing the new genetically enhanced crops. And that's a shame, because researchers in laboratories and plant breeding stations around the world are

endowing new biotech crop varieties with traits like disease resistance and improved nutritional value.

For example, researchers are trying to save bananas and plantains from commercial extinction in the coming decade. Bananas and plantains rank fourth as a staple crop after rice, wheat, and maize, providing food for nearly 400 million poor people. Unfortunately, bananas and plantains, are rapidly succumbing to global plagues like black sigatoka and a new variety of Panama disease. As a result, yields have dropped by half in many poor countries.

Bananas and plantains are sterile, and thus generally propagated by farmers as genetically identical clones. If one clone is susceptible to a disease, so are all of the other clones. Sterility also obviously makes it difficult for plant breeders to create new disease-resistant versions of bananas and plantains. This is precisely where biotechnology comes in handy. Researchers are trying to create hardy clones by directly inserting disease resistance genes from rice into banana tissue and coaxing the tissue into producing full grown plants, which can then be propagated.

Then there is golden rice. Golden rice was the first crop developed specifically as a nutritional enhancement for hundreds of millions of vitamin A-deficient poor people whose main staple is rice. In the developing world some 500,000 people per year go blind due to vitamin A deficiency. Conventional rice produces almost no vitamin A. Golden rice has a yellow hue because it has been genetically engineered to produce beta-carotene, the yellow precursor molecule that is turned into vitamin A by the body. The original version of golden rice released in 2000 contained beta-carotene genes from daffodils, and a serving of it provided about 20% of the recommended dietary allowance (RDA). A new version released this year, containing genes from maize has boosted the amount of beta-carotene per serving to 50% of the RDA.

The non-profit International Rice Research Institute is working with the Golden Rice Humanitarian Board to crossbreed genetically improved golden rice with local Asian varieties for eventual release to poor farmers

Finally, there is the case of disease resistant cassava. Researchers at the Donald Danforth Plant Science Center have developed a cassava plant that resists the devastating effects of cassava mosaic virus. The *St. Louis Post-Dispatch* points out that African subsistence farmer produced 108 million tons of cassava in 2004, more than two-and-a-half times the amount of maize they produced. But African farmers could produce a lot more if it weren't for the cassava mosaic virus. The virus reduces yields across Africa by 30% to 40%, and caused losses as high as \$2.7 billion in 2003.

The Danforth Center researchers inoculate the cassava plant against the disease by inserting a gene for the protein coat of the mosaic virus into the plant's own genome. This poses no health danger to people since they have suffered no ill effects from eating the virus on infected plants for decades. The Danforth Center's genetically improved cassava is now ready for field testing, but because of concerns about the reaction of the European Union and anti-biotech activists, no African nation has had the nerve to approve such tests yet.

Not surprisingly, the constituency of anti-biotech environmental groups like Greenpeace and Friends of the Earth is not poor African and Asian farmers and their families, but affluent and easily frightened European consumers. In response to ferocious pressure whipped up by the misleading campaigns of ideological environmentalists, EU politicians and bureaucrats have built an all but impenetrable wall of anti-biotech regulations around themselves. Wielding these onerous crop biotechnology regulations, the EU, on specious safety grounds, has essentially banned the importation of most biotech crops and foods. But these regulations do not only have consequences for European farmer and consumers.

The EU wants to export its regulatory system to the world, and it is offering "capacity building" foreign aid to persuade developing countries to adopt its no-go or go-slow approach to crop biotechnology regulations. Even more tragically, some developing countries are so afraid of the EU's anti-biotech wrath that they are willing to risk the lives of millions of their hungry by rejecting food aid that contains genetically enhanced crops.

NO ALLERGY PROBLEMS FROM GM MAIZE AND SOYBEAN STUDY

<http://www.planetark.com/dailynewsstory.cfm/newsid/32279/story.htm>

Despite concerns from some critics of genetically modified crops that the foods may raise consumers' risk of allergic reactions, a new study finds no evidence that this is the case.

The study, by researchers in Portugal, adds to evidence that several widely used strains of GM maize and soybeans do not promote food allergies.

All of the products -- three maize strains engineered to resist certain crop-ravaging insects and a soybean variety that tolerates a common weed killer -- have been on the market since the 1990s. The new study looked at a group of allergy-prone adults and children who had consumed products containing the biotech foods at some point since their approval in Europe.

The researchers gave 77 study participants allergy tests to see whether they reacted differently to the GM maize and soy than they did to conventional varieties. None of them did, according to findings published in the *Journal of Allergy & Clinical Immunology*.

Much of the maize and soybeans grown in the US is transgenic; meaning a gene or genes has been inserted into the genome of the plants to give them a desired trait.

European countries have been much slower to embrace the technology, as consumers there are far more wary of what some call "Frankenfoods." One of the concerns some critics have raised is the potential for allergic reactions to the foreign proteins in GM foods; if a gene were transferred from an allergenic source, which could make the resulting GM food more likely to trigger allergies.

The products tested in the current study included two manufactured by US biotech giant Monsanto, a maize variety known as MON 810 that is engineered to resist certain insects, and Roundup Ready soybeans, which are designed to tolerate the company's Roundup weed-killer.

The researchers also tested two pest-resistant maize varieties made by Syngenta and one herbicide-tolerant strain manufactured by Bayer Crop Sciences. None of these products, the study authors note, contain genes derived from sources known to trigger allergies.

RESEARCH ON ENGINEERED CROPS BOOMS

<http://www.businessday.co.za/articles/article.aspx?ID=BD4A69352>

Research on genetically engineered crops is booming at public institutions in South Africa and a handful of other African countries, according to a new study by the Washington-based International Food Policy Research Institute.

"Corporations are often seen as the only drivers of genetically engineered foods, but the reality is that a few African countries, despite their limited resources, have vibrant public biotechnology research programmes," said institute researcher and study co-author Joel Cohen.

The institute's study looked at the work being carried out by universities and science councils on genetically engineered crops in Kenya, Egypt, SA, and Zimbabwe. It also examined the "biosafety" laws in place to govern research and commercialisation of these crops. It found Egypt was researching the largest variety of crops (8), followed by SA (7), Zimbabwe (3), and Kenya (2).

Scientists are exploring ways to make crops resistant to insects, viruses, fungi and herbicides, or able to tolerate drought and salty soil. "We were surprised to discover there was so much going on," said institute researcher and study co-author Patrica Zambrano.

South African public sector scientists are researching new varieties of genetically engineered maize, melon, millet, lupins, soybeans, strawberries, sugarcane, cotton, apples, tomatoes, sorghum, wheat, potatoes and grapes.

The study noted that most African public sector research on genetically engineered crops was still at the early stages, and yet to be commercialised. All such crops sold in South Africa (maize, cotton and soybeans), for example, were developed by foreign companies.

Also, clearing these engineered crops through regulatory authorities was expensive, the study said. For example, the projected cost of getting virus-resistant potatoes through SA's legal system was about R5,5m.

The researchers noted African countries were short of skilled personnel, with potentially serious implications for regulation.

NOTICEBOARD

- 24 – 28 September 2005 - 2nd Inter-drought Meeting** is scheduled for Rome, Italy. The meeting is especially concerned with the drought situation in developing countries, and aims to serve as a platform for presenting and debating key issues and strategies relevant for increasing the yield and stability of crops under drought conditions by genetic and crop management approaches. For more information, write to Dr. Hans Bohnert at heid@lifeuiuc.edu, or visit <http://www.plantstress.com/id2>.
- 26 – 30 September 2005 – Canada's Biotech Week** - A series of various activities have been set to celebrate Biotechnology Week in Canada. Across the country events include career fairs, tour of Canadian biotech companies, exhibits, and seminars with leaders of the industry and with federal and provincial decision makers. For more information, visit <http://www.biotech.ca/imagenation>.
- 9 – 13 October 2005 – World Life Science Week, London.** Events include a conference, exhibition, workshop classes, and partnering opportunities and networking events for delegates from Europe, the US and Asia. Coinciding with the UK hosting the European Union Presidency, the week will start with Bio-Partnering Europe and continue with the international exhibition CORDIA. Information on the various events is available at <http://www.cordiaconvention.com>.
- 7 – 9 November 2005 – Bio-Europe 2005**, the 11th Annual International Partnering Conference will be held at the International Congress Centre in Dresden, Germany. Last year's conference attracted over 1400 delegates and 850 companies. More information can be obtained from <http://www.ebdgroup.com/bioeurope/index.htm>.
- 28 – 30 November 2005 – European Biotech Crossroads** - Four major events - a biotech trade show; Bioagenda, a business and technology transfer convention; a seminar program with 40 workshops; and Biotalent, a recruitment convention - are features of European Biotech Crossroads at Lille Grand Palais, France. Online information may be obtained at http://www.bcbiotech.ca/scripts/index_.asp?action=31&P_ID=4850&N_ID=1&PT_ID=76&U_ID=0

Booklet on GM Safety Assessment

Food Standards Australia New Zealand (FSANZ) has released a booklet "GM foods: Safety assessment of GM foods" which incorporates recent developments in safety assessment, particularly international methods. It is a follow-up to the booklet published in 2000 on GM foods and the consumer. The new publication contains an overview of safety assessment, a detailed look at safety assessment, and a summary of scientific data used by FSANZ to assess safety of GM foods. For a copy of the booklet, visit <http://www.foodstandards.gov.au>.

Ph.D. Bursaries

BioPAD Biotechnology Regional Innovation Centre (BioPAD BRIC), an initiative of the South African Department of Science & Technology, represents the interests of all stakeholders in Human Health, Animal Health, Mining, Environmental and Industrial Biotechnology, including, amongst others, industry, academia, government, finance and service providers. BioPAD invests in a portfolio of projects with the aim of creating a world-class, globally competitive Biotechnology sector in the region.

A BioPAD BRIC project lead by Prof. Derek Litthauer and Dr. Esta van Heerden of The Extreme Biochemistry Group at the University of the Free State, and partnered by CSIR Bio/Chemtek, is actively exploring extreme environments, including the deep subsurface, for unique and interesting microbes. Opportunities exist for PhD studies in this group at the University of the Free State. A wide variety of projects in molecular biology, genomics, proteomics, environmental biotechnology and structural biology are possible.

The NRF in partnership with BioPAD are offering **six Ph.D. bursaries** at the Extreme Biochemistry Group at the University of the Free State. An amount of ZAR65 000 per year (calculated pro rata for part of the year) is offered for successful candidates. Preference will be given to previously disadvantaged groups in making an appointment. The requirement for the bursary is a M.Sc. or equivalent in Microbiology, Biochemistry, Biotechnology or Genetics (molecular biology focus)

Interested candidates are encouraged to contact Dr Esta van Heerden or Prof. Derek Litthauer for more information about possible projects and you can submit a well motivated application including a detailed CV and the contact details of two referees. Applications will be considered at any time when they are received.

Dr. Esta van Heerden - E-mail: vheerde.sci@mail.uovs.ac.za, Tel: 051 4012472 or Prof. Derek Litthauer - E-mail: litthad.sci@mail.uovs.ac.za, Tel: 051 4012122.